WHAT IS CLAIMED IS:

1. A stem cell culture comprising stem cells transformed to express GATA6 or GATA4 or active portions or modificants thereof.

2. The stem cell culture of claim 1, wherein the stem cells are embryonic stem cells.

3. The stem cell culture of claim 2, wherein said embryonic stem cells are derived from an inner cell mass (ICM) layer of an embryo.

4. The stem cell culture of claim 3, wherein said embryo is a human embryo.

5. A stem cell expressing GATA6 or GATA4 or active portions or modificants thereof.

6. The stem cell of claim 5, wherein the stem cell is characterized by expression of at least one protein selected from the group consisting of nestin, class III β-tubulin, neural specific enolase, S-100 and glial specific acidic fibrillary protein (GFAP).

7. The stem cell of claim 5, wherein the stem cell is characterized by a neuron-like morphology.

8. The stem cell of claim 5, wherein the stem cell is an embryonic stem cell.

9. The stem cell of claim 5, wherein the stem cell comprises a polynucleotide sequence encoding said GATA6 or said GATA4 or active portions or modificants thereof.

10. A nucleic acid construct comprising a polynucleotide sequence encoding a GATA6 or a GATA4 or active portions or modificants thereof.

11. The nucleic acid construct of claim 10, further comprising at least one promoter sequence being for directing transcription of said polynucleotide sequence in stem cells.

12. The nucleic acid construct of claim 11, wherein said at least one promoter sequence is not active in differentiated cells.

13. The nucleic acid construct of claim 11, wherein said at least one promoter is selected from the group consisting of Spi2A minimal promoter and the hTERT promoter.

14. A method of generating neural stem cells comprising exposing stem cells to GATA6 or GATA4 or active portions or modificants thereof thereby generating neural stem cells.

15. The method of claim 14, wherein said exposing is effected for a time period sufficient for inducing expression in said stem cells of at least one protein selected from the group consisting of nestin, class III β-tubulin, neural specific enolase, S-100 and glial specific acidic fibrillary protein (GFAP).

16. The method of claim 14, wherein said exposing is effected by transforming said stem cells with a nucleic acid construct capable of expressing said GATA6 or said GATA4 or active portions or modificants thereof in said stem cells.

17. The method of claim 14, wherein said exposing is effected by culturing said stem cells on a feeder cell layer expressing said GATA6 or said GATA4 or active portions or modificants thereof.

18. The method of claim 17, wherein said feeder cell layer is capable of secreting said GATA6 or said GATA4 or active portions or modificants thereof expressed thereby.

19. The method of claim 14, wherein said stem cells are embryonic stem cells.

20. The method of claim 19, wherein said embryonic stem cells are derived from an inner cell mass (ICM) layer of an embryo.

21. The method of claim 20, wherein said embryo is a human embryo.

22. The method of claim 14, wherein said stem cells are cultured in a medium including DMEM/F12 with 3-7 μg/ml insulin, 80-120 μg/ml transferrin, 10-18 μg/ml putrescine, 3-7 ng/ml selenite and 3-7 ng/ml progesterone.

23. The method of claim 14, wherein said exposing is effected by culturing said stem cells in a culture medium supplemented with said GATA6 or said GATA4 or active portions or modificants thereof.

24. A feeder cell population comprising feeder cells transformed to express GATA6 or GATA4 or active portions or modificants thereof.

25. The feeder cell population of claim 24, wherein said feeder cells are fibroblasts.

26. The feeder cell population of claim 24, wherein said feeder cells comprise a nucleic acid construct including a polynucleotide sequence encoding said GATA6 or said GATA4 or active portions or modificants thereof.

27. A composition-of-matter comprising GATA6 or GATA4 or active portions or modificants thereof associated with a carrier suitable for directing

intracellular delivery of said GATA6 or said GATA4 or active portions or modificants thereof.

28. The composition-of-matter of claim 27, wherein said carrier is a lipid carrier.

29. The composition-of-matter of claim 27, wherein said carrier is a protein carrier.

30. A method of treating a neurological disorder characterized by neural cell degeneration or loss, the method comprising:

(a) administering stem cells to a subject diagnosed with the neurological disorder; and

(b) prior to, concomitant with or following administration, exposing said stem cells to GATA6 or GATA4 or active portions or modificants thereof to thereby treat the neurological disorder characterized by neural cell degeneration or loss.

31. The method of claim 30, wherein said exposing is effected for a time period sufficient for inducing expression in said stem cells of at least one protein selected from the group consisting of nestin, class III β-tubulin, neural specific enolase, S-100 and glial specific acidic fibrillary protein (GFAP).

32. The method of claim 30, wherein said exposing is effected by transforming said stem cells with a nucleic acid construct capable of expressing said GATA6 or said GATA4 or active portions or modificants thereof in said stem cells.

33. The method of claim 30, wherein said stem cells are embryonic stem cells.

34. The method of claim 33, wherein said embryonic stem cells are derived from an inner cell mass (ICM) layer of an embryo.

35. The method of claim 34, wherein said embryo is a human embryo.

36. The method of claim 30, wherein said exposing is effected by co-injecting said stem cells along with said GATA6 or said GATA4 or active portions or modificants thereof.

37. A method of treating a neurological disorder characterized by neural cell degeneration or loss, the method comprising:

(a) expressing within stem cells GATA6 or GATA4 or active portions or modificants thereof to thereby generate neural stem cells; and

(b) administering said neural stem cells to a subject diagnosed with the neurological disorder thereby treating the neurological disorder characterized by neural cell degeneration or loss.

38. The method of claim 37, wherein said expressing is effected by transforming said stem cells with a nucleic acid construct capable of expressing said GATA6 or said GATA4 or active portions or modificants thereof in said stem cells.

39. The method of claim 37, wherein said stem cells are embryonic stem cells.

40. The method of claim 39, wherein said embryonic stem cells are derived from an inner cell mass (ICM) layer of an embryo.

41. The method of claim 40, wherein said embryo is a human embryo.

42. The method of claim 37, wherein said stem cells are cultured in a medium including DMEM/F12 with 3-7 μg/ml insulin, 80-120 μg/ml transferrin, 10-18 μg/ml putrescine, 3-7 ng/ml selenite and 3-7 ng/ml progesterone prior to step (b).

43. The method of claim 37, wherein step (a) is effected for a time period sufficient for inducing in said stem cells expression of at least one protein selected

from the group consisting of nestin, class III β-tubulin, neural specific enolase, S-100 and glial specific acidic fibrillary protein (GFAP).